TOP SECRET

3556

[redacted]

[redacted]
10 December 1965

Copy No. 58 of 75

COST OF CONSTRUCTION AND CAPITAL INVESTMENT IN SELECTED PLANTS OF THE SOVIET AEROSPACE INDUSTRY: KOMSOMOL'SK AIRFRAME PLANTS [redacted]

CIA/RR EP SC 65-23

(ORR Project No. 33.4692E)

[redacted]

CENTRAL INTELLIGENCE AGENCY

Office of Research and Reports

[redacted]

TOP SECRET

BLANK PAGE

FOREWORD

This is one of a series of publications on major plants in the Soviet aerospace industry. The term aerospace industry refers to facilities for the fabrication and assembly of missiles, aircraft, and related engines. Intelligence information indicates that Komsomol'sk Airframe Plants N have been engaged in the Soviet aircraft production program.

This publication is not an industrial analysis of the Komsomol'sk facility or its activities, but is intended to be used in conjunction with other reports as an aid in such analysis and as a source of supplemental data. Common construction cost inputs and a common construction/capital-investment ratio have been used in all computations. The basic methodology used to cost the facilities was set forth in an earlier publication, CIA/RR EP SC 64-16, Cost of Construction and Capital Investment in the Dnepropetrovsk Missile Development and Production Center, 30 October 1964, TS

BLANK PAGE

CONTENTS

COST OF CONSTRUCTION AND CAPITAL INVESTMENT IN SELECTED PLANTS OF THE SOVIET AEROSPACE INDUSTRY: KOMSOMOL'SK AIRFRAME PLANTS NO. 126 AND NO. 130*

Summary and Conclusions

The total cost of construction of Komsomol'sk Airframe Plants [redacted] is estimated to be $49 million, or 28 million rubles.** Based on the estimated relationship between the cost of construction and total fixed capital assets for this industry,*** total capital investment (which includes cost of construction) at these two plants is estimated to be $110 million, or 62 million rubles.

Since the beginning of March 1958, Plant [redacted] has expanded its facilities by an estimated 34 percent in terms of value, with no expansion being noted since June 1962. Plant [redacted] has expanded its facilities during the same period by an estimated 37 percent in terms of value, with one major building in the early stages of construction as [redacted] of May 1965.

---

* The estimates and conclusions in this publication represent the best judgment of this Office as of 1 December 1965.

** Throughout this publication, dollar values are given in 1963 US dollars, and ruble values are given in new rubles expressed in 1955 prices. Dollar values in 1963 prices have been deflated to 1955 prices by multiplying 1963 prices by a factor of 0.792, and then converted to new rubles in 1955 prices at the 1955 ruble-dollar ratio of 0.71 ruble to US $1 for all industrial construction. The factor for the direct conversion of 1963 dollars to 1955 rubles is 0.562.

*** For a detailed methodology, see source 1/. (For serially numbered source references, see the Appendix.)

BLANK PAGE

I. Introduction

Komsomol'sk Airframe Plants N are located in the northeastern outskirts of Komsomol'sk, USSR. Both plants are adjacent to Komsomol'sk Airfield and are served by major roads and rail spurs.

The original plants were reported to have been under construction during 1933-37 and were enlarged during World War II and from 1958 2/ The first aircraft were produced in 1935, with production continuing thereafter, even though plant construction is reported to have been not yet completed. 3/ Evidence indicates that Plant has always produced component parts and subassemblies for Plant and has never assembled complete aircraft on its own. 4/

March 1958. 5/ 6/ Within this period, shows expansion in assembly and storage structures representing an estimated 34 percent in terms of value. No expansion has been noted since June 1962. has enlarged its capacity during this period in machine/workshop, assembly, storage, and miscellaneous facilities by approximately 37 percent in terms of value. One major building (No. 20) was started in April of 1964 and is presently in the early stages of construction (see the chart).

Both plants are surrounded by fences, with some internal areas in each plant also secured. It is reported that workers carry I. D. cards and are subject to search. 7/

Plant N covers approximately 106 acres, while No. 130 occupies about 140 acres. The adjacent Komsomol'sk Airfield, which serves as a flyaway field for these plants, includes a runway measuring 7,600 by 260 feet, of which the portion north of the railroad tracks was constructed after 1958.

* Airframe Plant now appears to be a unit of Airframe Plant N The original division into two plants has been maintained in this publication for convenience of reporting.

The plant layout and the identification of the major buildings, by type, used as a basis for costs in this publication are shown in the chart.* The share of the total building cost found to apply to the different types of buildings is shown in the following tabulation:

Type of Building	Percentage Share of Total Cost of Buildings		
	Plant	Plant	Combined
Engineering/administration	3	1	2
Heat processing		3	2
Machine/workshop	24	22	23
Assembly/fabrication	53	61	57
Storage/warehouse	15	8	11
Miscellaneous	5	5	5
Unidentified			
Total	100	100	100

Distribution of costs of construction by time periods, shown in Tables 1, 2, and 3, is on the basis of published reports. 8/

II. Methodology

A. General

Construction costs in this publication are based principally on 1963 unit costs prevailing in an area of the United States having climatic conditions similar to Komsomol'sk.

B. Climatic and Soil Data 9/

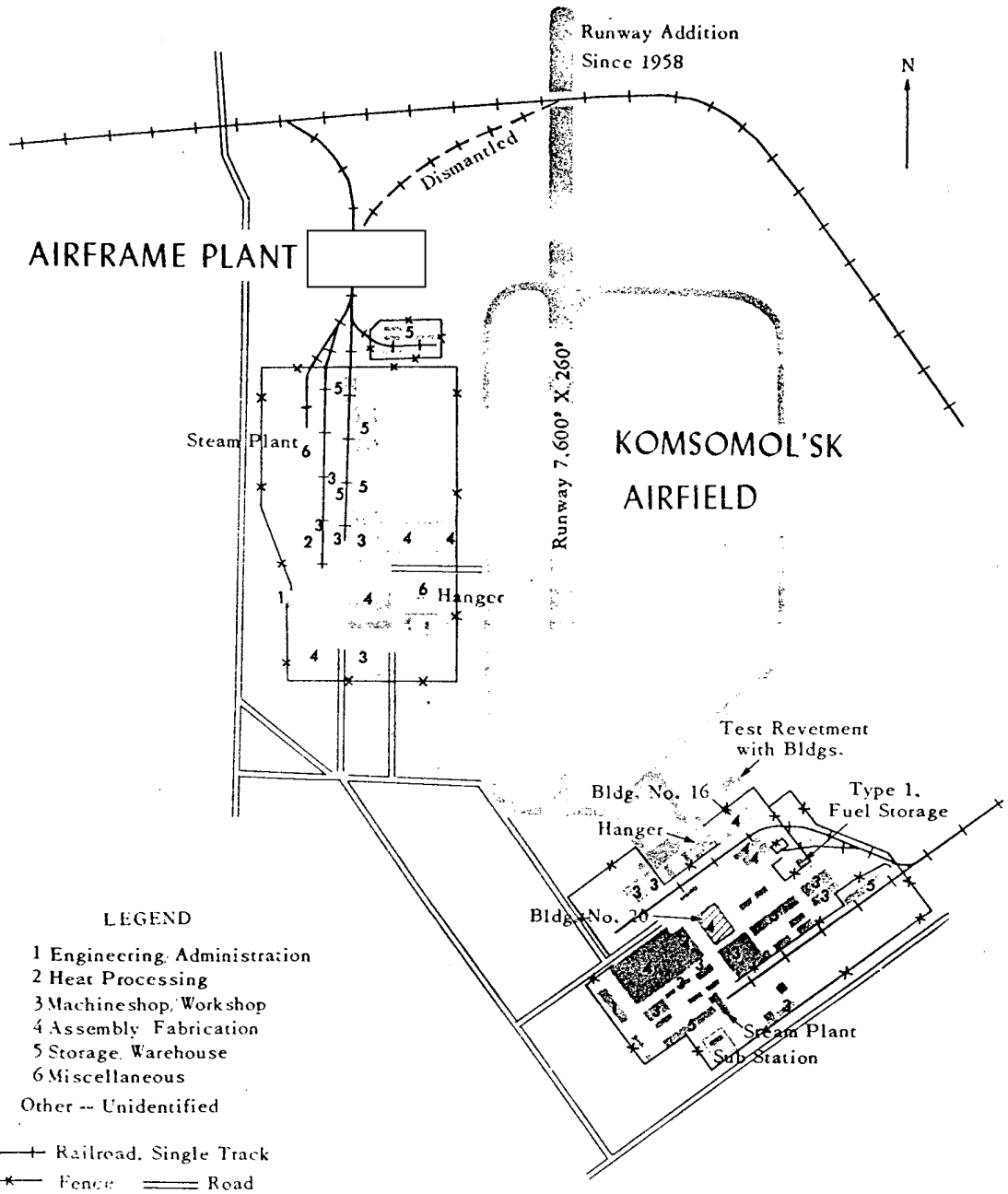
The climate of Komsomol'sk is characterized by short, relatively warm summers; very cold, dry winters; moderate snow cover; and moderate precipitation that occurs chiefly in summer. It is somewhat similar to the climate of the Yukon and Tanana Valleys of Alaska

* Unless otherwise indicated, identification and dimensions of the buildings are from published CIA/PID reports.

TOP SECRET

USSR:

KOMSOMOL'SK AIRFRAME PLANTS



AIRFRAME PLANT

TOP SECRET

49833 12-65

(for example, Fairbanks), except that Komsomol'sk has slightly longer, warmer, and wetter summers.

Plants [redacted] are situated about 1 nautical mile northwesterly from the Amur River on relatively flat terrain that is about 30 feet above the river level. Foundation conditions for surface installations below the level of frost penetration (absolute maximum of 6 feet) range from fair to poor.

C. Physical Facilities

The majority of the buildings are believed to have been constructed by using steel for framing. 10/ [redacted] analysis of building dimensions, 11/ the greatest building height in Plant [redacted] is [redacted] and in Plant [redacted] is [redacted]

D. Cost of Construction and Capital Investment

The cost of construction of those items in the category of building construction has been estimated on the basis of the volumetric unit cost for the particular type of structure. Costs of heavy construction, consisting of sewers, water supply, roads, railroads, fencing, electrical distribution, and grading, are estimated on the basis of plant size, work force, construction season, foundation conditions, and construction commonsense.

Capital investment was determined from the total cost of construction of each plant for each time period. The amount of construction work as a share of fixed capital assets is known for a number of Soviet industries as of 1 January 1956. The share of construction in fixed capital assets used in this publication is the same as that of the Soviet automobile industry or 44.7 percent. 12/ Capital investment and costs of construction, distributed over time, are shown in the tables.

* Data are not available on the ratio of the cost of construction to fixed capital assets for the Soviet aviation industry. Of the data available, those relating to the automotive industry are estimated to be most applicable. Although the reported figure of 44.7 percent has been used, it should not be construed to mean that the figure is accurate to a tenth of a percent.

III. Limitations

Available data are too scanty to warrant further expenditure of effort on estimating these costs. Assumptions, the validity of which cannot be checked at this time, have been made in preparing the estimates for this publication. A few of these assumptions concern the materials, equipment, and labor actually used, the depths of installation and [redacted] and sources of supply of building materials and equipment. The measurements used in computing building volume are considered to be the most complete to date. On the basis of a belief that errors in the assumptions will tend to balance out, the probable range of error of plus or minus 25 percent has been estimated.

Table 1

USSR: Capital Investment and Cost of Construction of Komsomol'sk Airframe Plants [redacted] Combined a/
Pre-March 1958 - May 1965

	Thousand 1963 US $				Total	
	Pre-March 1958	March 1958 - July 1960	August 1960 - June 1962	July 1962 - May 1965	Thousand 1963 US $	Thousand New Rubles b/
Capital investment c/	81,054	2,065	18,942	7,805	109,866	61,745
Of which:						
Construction	36,231	923	8,467	3,489	49,110	27,600
Buildings	33,198	860	7,735	3,223	45,016	25,299
Engineering/administration	931				931	523
Heat processing	716				716	402
Machine/workshop	9,402	100	903		10,405	5,848
Assembly/fabrication	15,783	649	5,837	3,223	25,492	14,327
Storage/warehouse	4,210	83	744		5,037	2,831
Miscellaneous	2,156	28	251		2,435	1,368
Heavy	3,033	63	732	266	4,094	2,301

a. For purposes of estimation and comparison, the data shown here have not been rounded. The data, however, are believed to be accurate as to general magnitude.
b. Expressed in 1955 prices.
c. Derived from costs of construction.

Table 2

USSR: Capital Investment and Cost of Construction of Komsomol'sk Airframe Plant [redacted] a/
Pre-March 1958 - May 1965

	Thousand 1963 US $				Total	
	Pre-March 1958	March 1958 - July 1960	August 1960 - June 1962	July 1962 - May 1965	Thousand 1963 US $	Thousand New Rubles b/
Capital investment c/	39,821	1,327	12,174		53,322	29,967
Of which:						
Construction	17,800	593	5,442		23,835	13,395
Buildings	16,153	549	4,937		21,639	12,161
Engineering/administration	180				180	101
Heat processing	716				716	402
Machine/workshop	4,849				4,849	2,725
Assembly/fabrication	7,832	526	4,729		13,087	7,355
Storage/warehouse	1,403	23	208		1,634	918
Miscellaneous	1,173				1,173	659
Heavy	1,647	44	505		2,196	1,234

a. For purposes of estimation and comparison, the data shown here have not been rounded. The data, however, are believed to be accurate as to general magnitude.
b. Expressed in 1955 prices.
c. Derived from costs of construction.

Table 3

USSR: Capital Investment and Cost of Construction of Komsomol'sk Airframe Plant [redacted] a/
Pre-March 1958 - May 1965

	Thousand 1963 US $				Total	
	Pre-March 1958	March 1958 - July 1960	August 1960 - June 1962	July 1962 - May 1965	Thousand 1963 US $	Thousand New Rubles b/
Capital investment c/	41,233	738	6,767	7,805	56,544	31,778
Of which:						
Construction	18,431	330	3,025	3,489	25,275	14,205
Buildings	17,045	311	2,798	3,223	23,377	13,138
Engineering/administration	751				751	422
Heat processing						
Machine/workshop	4,553	100	903		5,556	3,122
Assembly/fabrication	7,951	123	1,108	3,223 d/	12,405	6,972
Storage/warehouse	2,807	60	536		3,403	1,912
Miscellaneous	983	28	251		1,262	709
Heavy	1,386	19	227	266	1,898	1,067

a. For purposes of estimation and comparison, the data shown here have not been rounded. The data, however, are believed to be accurate as to general magnitude.
b. Expressed in 1955 prices.
c. Derived from costs of construction.
d. Represents two buildings denoted as No. 16 and No. 20 in the plant layout. Building No. 16 was started in the spring or summer of 1962 and completed by February 1964. Building No. 20 was started in April 1964 and was in the early stages of construction in May 1965.

TOP SECRET [redacted]

[redacted] TOP SECRET

BLANK PAGE

APPENDIX

SOURCE REFERENCES